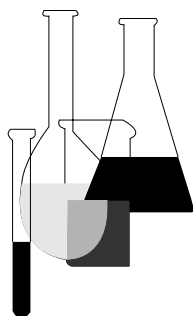




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# Spray Drift Test Guidelines

## OPPTS 840.1000 Background for Pesticide Aerial Drift Evaluation



## INTRODUCTION

This guideline is one of a series of test guidelines that have been developed by the Office of Prevention, Pesticides and Toxic Substances, United States Environmental Protection Agency for use in the testing of pesticides and toxic substances, and the development of test data that must be submitted by the Agency for review under Federal regulations.

The Office of Prevention, Pesticides and Toxic Substances (OPPTS) has developed this guideline through a process of harmonization that blended the testing guidance and requirements that existed in the Office of Pollution Prevention and Toxics (OPPT) and appeared in Title 40, Chapter I, Subchapter R of the Code of Federal Regulations (CFR), the Office of Pesticide Programs (OPP) which appeared in publications of the National Technical Information Service (NTIS) and the guidelines published by the Organization for Economic Cooperation and Development (OECD).

The purpose of harmonizing these guidelines into a single set of OPPTS guidelines is to minimize variations among the testing procedures that must be performed to meet the data requirements of the U. S. Environmental Protection Agency under the Toxic Substances Control Act (15 U.S.C. 2601) and the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136, *et seq.*).

**Final Guideline Release:** This guideline is available from the U.S. Government Printing Office, Washington, DC 20402 on *The Federal Bulletin Board*. By modem dial 202-512-1387, telnet and ftp: fedbbs.access.gpo.gov (IP 162.140.64.19), or call 202-512-0132 for disks or paper copies. This guideline is also available electronically in ASCII and PDF (portable document format) from the EPA's World Wide Web site (<http://www.epa.gov/epahome/research.htm>) under the heading "Researchers and Scientists/Test Methods and Guidelines/OPPTS Harmonized Test Guidelines."

## **OPPTS 840.1000 Background for pesticide aerial drift evaluation.**

(a) **Scope—(1) Applicability.** This guideline is intended to meet testing requirements of both the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136, *et seq.*) and the Toxic Substances Control Act (15 U.S.C. 2601).

(2) **Background.** The source materials used in developing this harmonized OPPTS guideline are OPP test guidelines Series 200–1 through 200–4—General (Pesticide Assessment Guidelines, Subdivision R: Pesticide Spray Drift Evaluation, EPA report 540/9–84–002, April 1984). This guideline provides an overview for spray drift evaluation and describes in general terms the Spray Drift Data Base currently under development and its potential uses.

(b) **General—(1) Purpose.** The guidelines in this series deal with data submittal to support the registration of all outdoor use pesticides that are to be applied by aerial application methods (fixed- or rotary-wing), air carrier (mist blowers), overhead sprinkler irrigation devices, or other ground application equipment. Data required to evaluate pesticide spray drift may be derived from studies of droplet size spectrum and spray drift field evaluations. These data can contribute to development of the overall exposure estimate for use in assessing the potential hazard of pesticides to humans, fish and wildlife, or plants.

(2) **Definitions.** Terms used in this guideline shall have the meanings set forth in FIFRA 136, section 2 and OPPTS 830.1000. In addition, for the purposes of this guideline:

*Nontarget organism* means any plant, animal, or human species not considered to be pests. These species are not intended to be controlled, injured, killed, or detrimentally affected in any way by a pesticide.

*Primary drift* refers to the physical process of movement of pesticide particles or droplets through air at or near the time of initial deposition on the target away from the site of application.

*Target area* means the area intentionally treated with a pesticide when label use directions are followed.

(c) **Data requirements.** The drift potential of a pesticide applied either by aircraft or ground equipment may be determined in two stages. The initial stage involves the determination of possible detrimental effects to nontarget organisms that may be produced through dermal (or foliar) exposure to the pesticide. The second stage involves studies to determine droplet size spectra and drift characterizations of pesticide product based on proposed use limitations. The droplet size spectrum study would demonstrate typical droplet size distribution. Determination of the spray droplet size spectrum may be performed using wind tunnels or during the field study evaluation using commercial equipment. The field studies involve

commercial equipment to determine the extent of spray drift (droplet deposition vs. distance) from application using typical equipment and environmental conditions.

(d) **Spray drift studies.** Droplet size spectrum studies (see OPPTS 840.1100) and drift field evaluation studies (see OPPTS 840.1200) are designed to provide an estimate of droplet deposition away from the target site at or near the time of initial deposition. These off-site transport data are needed to evaluate the potential risk from pesticide exposure to humans, plants, fish and wildlife by products expected to be applied by aerial, air carrier, mist blower, overhead sprinkler irrigation and other similar outdoor application equipment. These studies are required by 40 CFR 158.440 to support the registration of any pesticide intended for outdoor use under the FIFRA, as amended. Studies are required on:

(1) Droplet size spectrum to aid in the determination of potential drift from the proposed application methods.

(2) Field drift evaluation which determines the movement and deposition of droplets as a function of distance away from target site for the proposed application methods under a reasonable “worse case” scenario.

Test data ordinarily are required to support the registration of each end-use product that meets the criteria and each manufacturing-use product used to make such an end-product.

(e) **Test substance.** The test substance is a typical spray mixture using a formulated product. Generally, the test substance is prepared by the basic manufacturer of a pesticide. The composition of the test substance shall be reported, including the name and quantity of adjuvants and surfactants, in order to account for 100 percent of the test sample in accordance with OPPTS 830.1550.

(f) **Spray drift data base.** (1) An industry consortium has developed a spray drift data base. The premise used in developing the data base was that the physical properties of the spray and the mechanics of application (i.e., equipment and meteorology) are the primary determinants of drift rather than the chemical property of the pure active ingredient (except as manifested through effects on physical properties). In developing the data base, the consortium considered spray drift data already available from submissions to EPA, published research, and other sources within industry, government, and academia. Review of the data base and any corresponding models by Agency and outside experts is underway. The data base and the scope of its applicability to satisfy spray drift data requirements for pesticide product registrations is being peer reviewed by the Scientific Advisory Panel (SAP). Spray Drift Task Force (SDTF) and Agency scientists are using the data to develop a series of methods to estimate spray drift potential. The goals of this effort are to produce models for drift potential from aerial application and other methods for the calculation of exposure

to drift from airblast, ground hydraulic application and chemigation. The Office of Pesticide Programs plans to use these methods for risk assessment and risk management decision-making. Ultimately, these methods or modifications of them may be available to applicators in the field to facilitate on-the-spot drift management decisions prior to applications.

(2) It is possible that some use patterns and uncommon formulations for which the Agency might require separate spray drift studies would not be included in the data base. For these use patterns, specific testing would be required using OPPTS 840.1100 and 840.1200.

(g) **Data reporting.** See OPPTS 840.1100 for data reporting guidance on spray droplet size spectrum and OPPTS 840.1200 for spray drift field deposition.

(h) **References.** The following references may be consulted for additional background information.

(1) Environmental Protection Agency, Standard Evaluation Procedure—Pesticide Spray Drift Evaluation: Droplet Size Spectrum Test and Drift Field Evaluation Test, EPA report number 540/9–86–131, June 1986.

(2) Environmental Protection Agency, Pesticide Regulation Notice PR 90–3, Announcing the Formation of an Industry-Wide Spray Drift Task Force, April 6, 1990.